

### **REMARKS**

In the non-final 8 August 2006 *Office Action*, the Examiner rejects all pending claims, Claims 1-5 and 7-50. Applicants thank the Examiner with appreciation for the careful consideration and examination given to the Application. By this *Response*, Applicants amend Claims 1-5, 7-9, 11-13, 16-26, and 30-46; cancel Claims 10 and 28; and add new Claims 51-54.

Applicants reserve the right to present new or additional claims in this Application that have similar or broader scope as originally filed. Applicants also reserve the right to present additional claims in a later-filed continuation application that have similar or broader scope as originally filed.

After entry of this *Response*, Claims 1-5, 7-9, 11-27, and 29-54 are pending in the Application. Applicants respectfully assert that the pending claims are in condition for allowance and respectfully requests reconsideration of the claims in light of the following remarks. Applicants believe that the pending claims are allowable for the following reasons.

#### **I. Claim Amendments, Cancellations, & Additions**

Applicants introduce certain changes to the Application's claims. More specifically, Applicants alter the claims as follows:

- Independent Claims 1, 16, 42, and 43 are amended for clarification.
- Claims 2-5, 7, 9, 12, 13, and 33-35 are amended to bring them into conformity with amended Claim 1. Claim 9 is amended to depend from Claim 7. Claims 2 and 3 are amended to add minor changes.
- Claims 17-24, 25, 26, 30, 32, and 36-41 are amended to bring them into conformity with amended Claim 16. Claim 24 is amended to depend from Claim 22. Claims 17, 18, 30, and 31 are amended to add minor changes.
- Claims 44 to 46 are amended to bring them into conformity with amended Claim 43.
- Claims 10 and 28 are cancelled without prejudice.
- New dependent Claims 51 to 54 are added, and are based on the limitation of former Claims 1, 16, 42, and 43.

Applicants respectfully submit that the present submission does not introduce new matter into the application. Indeed, Applicants respectfully assert that the presently submitted claim amendments are fully supported by the application as originally filed. In particular, support for the amendment to the Claims 1, 16, 42, and 43 can be found, for example, on page 11, line 1 to page 16, line 16, Figures 2A, 2B and 3, and in original Claims 4, 7, 8, 10, 19, 22, 23 and 28. The expressions “without adaptively modifying ...” and “explicitly (identifying)” in Claims 1, 16, 42, and 43 are reasonably inferred from the application as originally filed, and one of ordinary skill in the art could read them from the application as originally filed. The limitations “a converter having a known transfer function” and “converting ... to audio output” in Claims 1, 16, 42, and 43 are supported by the application as originally filed, for example, in the description on page 13, line 25, page 14, lines 13 and 14, which refers to “loud speaker 31b”, and in original Claims 7, 8, 22, and 23. Support for new Claims 51 to 54 can be found, for example, in the description on page 10, line 8 to page 15, line 18 and Figures 2A, 2B and 3. Thus, it is believed that no new matter has been introduced into the Application by the present submission.

## **II. 35 U.S.C. § 112 Claim Rejections**

The Examiner rejects Claims 5, 13, 20, 25, 27, and 46 under 35 U.S.C. § 112, first paragraph. More specifically, the Examiner states that the limitation of “generates the second predictable digital noise signal that is substantially identical to the first predictable noise signal on a sample-by-sample basis” is not supported in the specification so as to enable one skilled in the art to make and/or use this limitation, by referring to the specification on page 6, lines 12 to 27. Applicant respectfully requests reconsideration and withdrawal of the rejections.

The description on page 13, lines 3 to 16 refers to T. Schneider et al. “A Dual channel MLS-Based Test System for Hearing-Aid Characterization”, J. Audio Eng. Soc. Vol. 41, No. 7/8, July/August 1993, p 583-593,<sup>1</sup> and states:

“the noise can be generated in a controlled way means that the random noise is always the same on a sample-by-sample basis. Therefore, it is possible to have two or more noise generators, i.e., MLS generators, produce the exact same noise sample at different instants in time . . . .”

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<sup>1</sup> Applicants submitted this reference in a 7 March 2002 IDS Submission; thus the reference is of record in the Application enabling the Examiner to review this reference.

Accordingly, one of skill in the art could make and use the above limitation by reading the specification as a whole in addition to T. Schneider et al. "A Dual channel MLS-Based Test System for Hearing-Aid Characterization", J. Audio Eng. Soc. Vol. 41, No. 7/8, July/August 1993, p 583-593", which is incorporated by reference into the Application. It is, therefore, respectfully submitted that Claims 5, 13, 20, 25, 27, and 46 comply with 35 U.S.C. § 112. Thus, Applicant respectfully requests withdrawal of the § 112 rejections.

### **III. 35 U.S.C. § 103 Rejections**

In the *Office Action*, the Examiner rejects certain claims under 35 U.S.C. 103(a) as allegedly being unpatentable due to certain reference combinations. More specifically: (1) Claims 1-4, 7-11, 14-19, 22-24, 26, 29-31, and 33-45 are rejected as allegedly being unpatentable over *Gardner* (USPN 5,737,433) in view of *Hamabe* (USPN 5,426,703); (2) Claim 12 is rejected as being unpatentable over *Gardner* in view of *Hamabe* and *Puckette* (USPN 3,654,390); (3) Claims 5, 13, 20-21, 25, 27-28, 32, and 46-48 are rejected over *Gardner* in view of *Hamabe* and *Lavoie* (USPGPUB 2001/0038702); and (4) Claims 49-50 are rejected over *Gardner* in view of *Hamabe* and *Roberts* ("Digital Signal Processing", ISBN, 0-201-16350-0, pp. 486 to 487).

Applicants respectfully request reconsideration and withdrawal of the § 103 rejections. As discussed more fully below, the cited combinations fail to teach or fairly suggest each and every claimed element and limitation of Applicants' currently claimed invention as required by MPEP § 2143 for a *prima facie* case of obviousness.

As the Examiner will recall, Applicants' application discloses measuring and equalizing a microphone. According to certain embodiments, a transfer function of a microphone is explicitly identified by using a first predictable noise, a second predictable noise, a synchronizer for synchronizing the first and second predictable noises in time, a converter having a known transfer function, and a compensation filter for compensating for the known transfer function. The first predictable noise is provided to the converter (e.g., loud speaker) for converting its input to an audio output, and then the audio output is provided to the microphone. The second predictable noise, which is synchronized with the first predictable noise, is provided to the compensation filter.

Based on the outputs from the microphone and the compensation filter, the transfer function of the microphone is identified. Using the transfer function of the microphone, a filter

function for the microphone is determined so that the product of the microphone's transfer function and the filter function becomes a single function. The single function is selected for one or more microphones. The filter function is applied to an equalization filter for the microphone so that a transfer function between the microphone and the equalization filter for the microphone is substantially equal to the single selected function.

*Gardner* discloses a sound environment control system. However, *Gardner* neither suggests nor teaches explicitly identifying the transfer function of a microphone. *Gardner* neither suggests nor teaches a converter having a known transfer function and a compensation filter for compensating for the transfer function of the converter. *Gardner* also neither suggests nor teaches a first predictable noise, a second predictable noise and a synchronizer for synchronizing the first and second predictable noises in time.

According to Applicant's currently claimed invention, a converter converts a predictable noise to an audio output, and the audio output is applied to the microphone without adaptively modifying the audio output.

By contrast, *Hamabe* adaptively modifies noise generated by a loudspeaker to continuously ensure that the phase difference between environmental noise and noise generated by the loudspeaker is always 180 degrees (Col. 1, Lines 1 to 5), whereby the environmental noise becomes inaudible. In *Hamabe*, the audio output from the loudspeaker varies the time due to the properties of the environmental noise. Hence, identification of the microphone transfer function is not possible by *Hamabe*.

*Lavoie* discloses measuring and equalizing listening paths for surround speakers. *Lavoie* supplies to loudspeakers an MLS signal. The reference microphone 11 collects outputs from the loudspeakers. *Lavoie* correlates the samples from the reference microphone 11 with the MLS signal generated by the MLS generator 21, and determines a whitened response for the entire sound path. (Paragraph [0035], Claim 1 of *Lavoie*).

*Lavoie* measures a path and subsequently applying math to the response representing the measured path with the objective of the math to equalize the measured path. Specifically, *Lavoie* states in Paragraph [0035] that the measured path includes a response of all elements in the signal path such as a power amplifier, loudspeaker, room, and calibration microphone. Claim 1 of *Lavoie* recites, among other things, processing a channel response to produce a whitened system response.

As such, it is clear that *Lavoie* is intended to equalize *an entire listening path rather than a part of it*. *Lavoie* can obtain a response for the entire sound path; however *Lavoie* cannot explicitly identify the transfer function of the microphone.

As discussed above, *Gardner* and *Hamabe* fail to disclose or suggest the subject matter claimed in Claims 1, 16, 42, and 43. In addition, *Lavoie*, *Puckette*, and *Roberts* do not cure the deficiencies of *Gardner* and *Hamabe*. Thus, it is respectfully submitted that all pending claims (Claims 1-54) are patentable over the cited references, taken individually or in concert, since the cited references fail to teach or fairly suggest Applicants' claimed invention as a whole. In view of the above amendments and remarks, and having dealt with all of the matters raised by the Examiner, early reconsideration and allowance of the application is respectfully requested.

#### **IV. Fees, Request for Continued Examination, & Petition for Two-Month Extension**

Applicant files this Response within five months of the 8 August 2006 *Final Office Action* and with 2 extra claims over twenty. Thus, the undersigned pays claims (\$100) and extension fees (\$450) totaling \$550 via EFS-Web.

Applicant also files this Response with a request for continued examination pursuant to 37 CFR § 1.114 and Applicant also respectfully requests continued examination pursuant to 37 CFR § 1.114. Thus, the undersigned pays the RCE fee (\$790) via EFS-Web and submits this response as the required RCE submission.

No additional fees are believed due. The Commissioner is authorized, however, to charge any fees that may be required, or credit any overpayment, to Deposit Account No. 20-1507 for full acceptance of this submission.

**V. Conclusion**

This Response is believed to be a complete response to the Final Office Action mailed 8 August 2006. Applicants respectfully assert that all pending claims are in condition for allowance and respectfully request passing of this case in due course of patent office business. If the Examiner believes there are other issues that can be resolved by a telephone interview, or there are any informalities remaining in the application which may be corrected by an Examiner's amendment, a telephone call to Hunter Yancey at (404) 885-3696 is respectfully requested.

Respectfully submitted,

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